10. Patricia

Program Name: Patricia.java **Input File: patricia.dat**

Chance and probability have always interested Patricia, and she has been experimenting with drawing red and green pebbles out of a sack, in different combinations. She has learned the theory behind it all, and knows that the chances of drawing a single red pebble out of a sack of both red and green marbles is simply a fraction with the numerator being the number of red pebbles in the sack, and the bottom number being the total number of red and green pebbles. For example, if there are 8 red pebbles and 2 green pebbles in the sack, the chances of removing a red pebble is 8 out of 10. The chances of drawing a green pebble would be 2 out of 10.

She also knows that there are several combinations of two draws that can be calculated. For example, if the same 8 red and 2 green marbles are in the bag, the chance of drawing first a red, and then a green, depends on whether or not you put back the first pebble. If you do put it back, the chances of this two pebble combination would be the product of the two fractions, which would be 8/10 times 2/10, or 16/100. However, if you did not replace the first pebble drawn, the chances of the same combination increase to 16/90, the product of 8/10 and 2/9. She understands that the number pebbles in the bag has been reduced by 1, which is why the second fraction has the denominator of 9.

She needs your help in researching all possibilities with different number of red and green pebbles, including drawing two of the same color, with or without replacing the first pebble, and so on.

Input: An initial integer N, followed by N data sets. Each data set starts with the value P (1 or 2), indicating how many pebbles are to be drawn out of the bag for the experiment. Following that are two integers, indicating how many red and green pebbles are in the bag. If 2 draws are to be made, a letter Y or N indicates whether or not the first pebble will be replaced, followed by P instances of the letters 'R' and/or 'G', indicating the colors to be drawn.

For example, the first data set below indicates that one red pebble will be drawn from a bag containing 8 red and 2 green pebbles.

For the next data set, two pebbles (first a red, then a green) will be drawn from a bag initially containing 8 red and 2 green pebbles. The N indicates that the first pebble will not be replaced.

Output: The non-reduced fraction representing the chances of drawing the pebble(s) indicated by the data set.

Sample input:

```
3
1 8 2 R
2 8 2 N R G
2 8 2 Y R G
```

Sample output:

```
8/10
16/90
16/100
```